

Willow Creek Subbasin Assessment and TMDLs



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Abbreviations, Acronyms, and Symbols

§303(d)	Refers to section 303 subsection (d) of the Clean Water Act, or a list of impaired waterbodies required by this section	DEQ	Department of Environmental Quality
μ	micro, one-one thousandth	DO	dissolved oxygen
§	Section (usually a section of federal or state rules or statutes)	DWS	domestic water supply
ADB	assessment database	EPA	United States Environmental Protection Agency
AWS	agricultural water supply	F	Fahrenheit
BLM	United States Bureau of Land Management	GIS	Geographical Information Systems
BMP	best management practice	HUC	Hydrologic Unit Code
BOD	biochemical oxygen demand	I.C.	Idaho Code
BOR	United States Bureau of Reclamation	IDAPA	Refers to citations of Idaho administrative rules
BURP	Beneficial Use Reconnaissance Program	IDFG	Idaho Department of Fish and Game
C	Celsius	IDL	Idaho Department of Lands
CFR	Code of Federal Regulations (refers to citations in the federal administrative rules)	km	kilometer
cfs	cubic feet per second	km²	square kilometer
cm	centimeters	LA	load allocation
CWA	Clean Water Act	LC	load capacity
CWAL	cold water aquatic life	m	meter
		m³	cubic meter
		mi	mile
		mi²	square miles
		MBI	macroinvertebrate index

mg/L	milligrams per liter	STATSGO	State Soil Geographic Database
mm	millimeter		
MOS	margin of safety	TDS	total dissolved solids
n.a.	not applicable	TKN	total Kjeldahl nitrogen
NA	not assessed	TMDL	total maximum daily load
NB	natural background	TP	total phosphorus
nd	no data (data not available)	TS	total solids
NFS	not fully supporting	TSS	total suspended sediment
NPDES	National Pollutant Discharge Elimination System	t/y	tons per year
NRCS	Natural Resources Conservation Service	U.S.	United States
PCR	primary contact recreation	U.S.C.	United States Code
PFC	proper functioning condition	USDA	United States Department of Agriculture
ppm	part(s) per million	USFS	United States Forest Service
QA	quality assurance	USGS	United States Geological Survey
QC	quality control	WAG	Watershed Advisory Group
SBA	subbasin assessment	WBAG	<i>Waterbody Assessment Guidance</i>
SCR	secondary contact recreation	WBID	waterbody identification number
SFI	DEQ's stream fish index	WLA	wasteload allocation
SHI	DEQ's stream habitat index	WQLS	water quality limited segment
SMI	DEQ's stream macroinvertebrate index	WQS	water quality standard
SS	suspended sediment		

Executive Summary

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters. States and tribes, pursuant to Section 303 of the CWA, are to adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the waters whenever possible. Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize waterbodies that are water quality limited (i.e., waterbodies that do not meet water quality standards). States and tribes must periodically publish a priority list of impaired waters, currently every two years. For waters identified on this list, states and tribes must develop a total maximum daily load (TMDL) for the pollutants, set at a level to achieve water quality standards. This document addresses the waterbodies in the Willow Creek subbasin that have been placed on what is known as the "§303(d) list."

This subbasin assessment and TMDL analysis has been developed to comply with Idaho's TMDL schedule. This assessment describes the physical, biological, and cultural setting; water quality status; pollutant sources; and recent pollution control actions in the Willow Creek Subbasin located in southeast Idaho. The first part of this document, the subbasin assessment, is an important first step in leading to the TMDL. The starting point for this assessment was Idaho's current §303(d) list of water quality limited waterbodies. Twenty segments of the Willow Creek Subbasin were listed on this list. The subbasin assessment portion of this document examines the current status of §303(d) listed waters and defines the extent of impairment and causes of water quality limitation throughout the subbasin. The loading analysis quantifies pollutant sources and allocates responsibility for load reductions needed to return listed waters to a condition of meeting water quality standards.

Subbasin at a Glance

The Willow Creek Subbasin in southeastern Idaho (Figure A) is a watershed of the Upper Snake River Basin. Waters of Willow Creek are connected to the Snake River through a complex irrigation system located below the Ririe Reservoir.

Native fish populations, water quality, and riparian habitat conditions are issues of concern in the subbasin. The cumulative effects of land management in riparian areas, human-caused stream alterations, roads, limited recreation, and pockets of timber harvesting have combined to limit compliance with water quality standards. The production and survival of resident fishes is also impacted throughout the watershed.

Rainbow trout, Yellowstone cutthroat trout, brook trout, and brown trout have all been documented in the watershed. Yellowstone cutthroat trout is a state sensitive species carefully managed by the Idaho Department of Fish and Game (IDFG). Fish count data show that salmonid populations, a family to which the fish listed belong, are trending downwards in the subbasin.

Designated uses for Willow Creek (proper) are: cold water aquatic life, salmonid spawning, primary contact recreation, secondary contact recreation, domestic water supply, and special

resource water. Undesignated uses are cold water aquatic life and primary and secondary contact recreation for the remainder of the watershed, which includes the following: Birch Creek, Sellars Creek, Mill Creek, Crane Creek, Long Valley Creek, Grays Lake Outlet, Homer Creek, Brockman Creek, Corral Creek, Sawmill Creek, Lava Creek, Hell Creek, Tex Creek, and Meadow Creek.

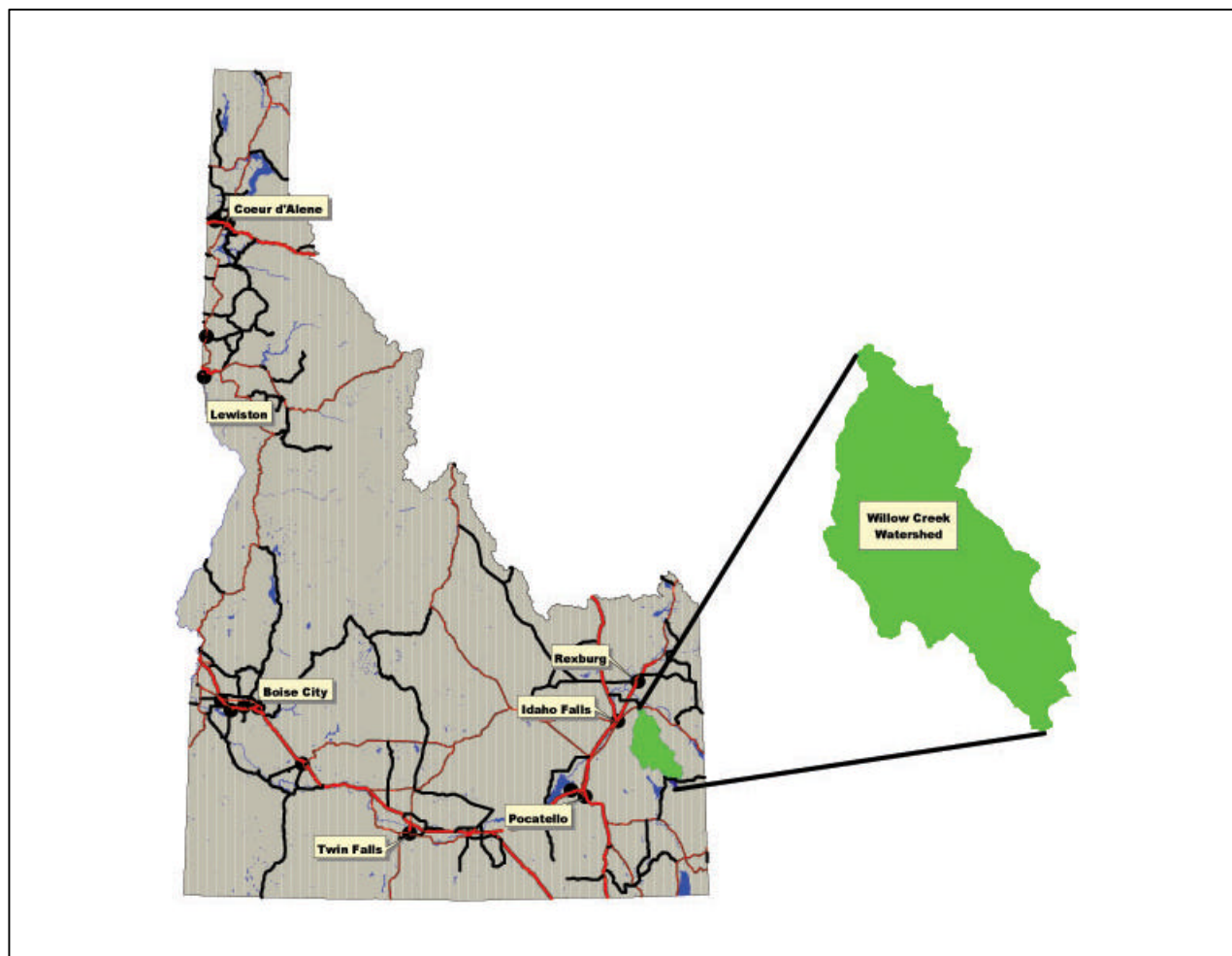


Figure A. Willow Creek Subbasin at a Glance

Biological assessments conducted by the Idaho Department of Environmental Quality (DEQ) in discrete locations have shown that several streams in the subbasin are water quality limited. Sediment and temperature are the primary pollutants of concern with some nutrient listings. Flow alteration has also been identified as a source of perturbation in the subbasin.

Data has been collected and analyzed to evaluate the scope of the water quality limiting issues on the 303(d) listed streams in the Willow Creek Subbasin. Fourteen sediment, twelve temperature, and one nutrient TMDLs, as summarized in Table A, have been developed from the results of the data, or in response to the data.

Table A. Streams and pollutants for which TMDLs were developed.

Stream	Pollutant(s)
Brockman Creek	Sediment, Temperature
Buck Creek	Sediment
Corral Creek	Sediment, Temperature
Crane Creek	Sediment
Grays Lake Outlet	Temperature
Hell Creek	Sediment, Temperature
Homer Creek	Sediment, Temperature
Lava Creek	Sediment, Temperature
Meadow Creek	Sediment
Mill Creek	Sediment, Temperature
Rock Creek	Temperature
Sawmill Creek	Sediment, Temperature
Sellars Creek	Sediment, Temperature
Seventy Creek	Sediment
Tex Creek	Sediment, Temperature
Willow Creek	Sediment, Temperature, Nutrients

TMDLs for sediment are quantified through streambank erosion inventories and road sediment modeling. Sediment loading targets were developed based on literature detailing expected natural conditions and substrate sediment impacts on salmonid spawning. The target values established will be used to quantify streambank recovery and determine the need for additional management practices to improve water quality.

TDML targets for substrate sediment are adopted from literature detailing its impact on salmonid egg and fry emergence. The target values established in this assessment will be used to indicate trends related to channel morphology and streambank recovery. Beneficial use support status and compliance with state water quality standards will be used to determine the need for additional best management practices to improve water quality.

Temperature TMDLs have been developed for all streams, where thermograph data has been collected, to support salmonid spawning and cold water aquatic life. Salmonid spawning has been determined to be the presumed use for all streams in the subbasin.

Reduced riparian vegetation contributes to accelerated streambank erosion which results in increased thermal loading which, combined with associated changes in channel morphology are the primary causes of increased temperature loading in affected streams.

Elevated temperatures from reduced riparian vegetation and accelerated streambank erosion have been exacerbated by an ongoing drought in the subbasin.

TDMLs were not developed for streams listed as flow altered. Streams listed as flow altered and streams discovered to be flow altered for significant portions of the year do not have a reasonable potential to support beneficial uses. The EPA does not believe that flow (or lack of flow) is a pollutant as defined by CWA Section 502(6). Since TMDLs are not required to be established for waterbodies impaired by pollution but not pollutants, TMDLs will not be developed for flow altered streams, at this time. They will be relisted as flow altered.

Key Findings

Land use and management, along with stream conditions throughout the entire subbasin, are primarily homogeneous. The magnitude of sediment loading within the subbasin is widespread, predominantly attributable to streambank erosion from over-utilization of riparian habitat. Some additional sources of sediment loading are poor road maintenance, road crossings, and limited mass wasting (downward movement of earth and rock due to the force of gravity.)

Anthropogenic (human-related) causes of flow alteration in the subbasin include diversion for stock watering and irrigation. It is not likely that beneficial uses will be restored in streams of the watershed where dewatering from surface water diversion occurs during significant portions of the year. The potential exists for a voluntary and cooperative management agreement to improve flow conditions without negatively impacting the rural economy.

DEQ has developed recommendations for the reduction of sediment from streambank erosion and road erosion within the Willow Creek Subbasin. The recommendations result in beneficial use support through improving streambank stability and reducing road erosion, ultimately improving riparian vegetation. All sediment loads are developed through the estimation of sediment delivery to streams from streambank and road erosion.

TDMLs are recommended for sediment, temperature, and nutrients based upon the following criteria:

Sediment TMDLs are based on literature suggesting that 80% bank stabilities show for full beneficial use support. Cold water aquatic life and salmonid spawning are expected to be fully supported at 80% streambank stability. Instream sediment targets have been identified from literature values that are supportive of salmonid spawning and coldwater aquatic life. These target values are set at 28% fine sediment less than 6.35 mm in diameter in spawning habitat and will be used to track the progress of streambank stabilization and the reduction of depth fines to determine the need for additional management practices to improve water quality in the Willow Creek Subbasin.

Temperature TMDLs have been developed for streams where temperature data has been collected and shows an exceedance of temperature criteria in greater than 10% of observation

days during spring or fall spawning periods. Thermograph data established that temperature TMDLs were necessary to meet the numeric salmonid spawning criteria [IDAPA 58.01.02.250(02)]. All Temperature TMDL load reductions were developed by quantifying the daily temperature exceedance during spring and fall spawning and subtracting that from the spawning temperature criteria to formulate the load reduction (allocation). Streambank erosion, reduced riparian vegetation, and low flow conditions are the causes of increased water temperatures in the subbasin. The TMDL temperature targets are the salmonid spawning temperature criteria established in Idaho's administrative code [IDAPA 58.01.02.250(02)].

Nutrient TMDLs have been established for Willow Creek where nutrient monitoring data shows elevated levels of phosphorus and nitrogen in conjunction with low dissolved oxygen levels in the stream and visual observation of deleterious levels of aquatic plant growth. The TMDL target values are based on EPA suggestions for the preservation of cold water aquatic life.

There are twenty-two 303(d) listed stream segments in the Willow Creek Subbasin. In the text that follows there are descriptions of the water quality issues related to the 303(d) listed streams. Table B provides a summary of the assessment outcomes for each of the 303(d) listed stream segments.

Birch Creek

Birch Creek's water is retained upstream in two locations, thus reducing flow below Bone Road to less than 1 cfs a large portion of the year. Flow alteration is the driving issue here so, a sediment TMDL will not be developed for Birch Creek.

Brockman Creek

Predominant landuse activities on Brockman Creek are sheep and cattle grazing. The over utilization of riparian zones has contributed to active downcutting, creating a stream that is highly entrenched with high width/depth ratios and lateral recession rates. The estimated current sediment-loading rate is 384 tons/mile/year. To address sediment issues, a TMDL was developed prescribing an annual loading rate of 25 tons/mile/year, provided banks are restored to 80% stability.

Brockman Creek is not listed for temperature, but thermograph data show that stream temperatures exceed Idaho's salmonid spawning criteria. In order to protect beneficial use support, TMDLs were developed for Brockman Creek. Brockman Creek's current temperature-loading rate is 19.7°C (maximum daily) and 17.84°C (maximum daily average). A 34% reduction in the maximum daily temperature is necessary to meet the criteria.

Corral Creek

Corral Creek is listed for sediment and temperature. Land use is predominated by sheep and cattle grazing where riparian impacts are evident with high bank instabilities. The current

estimated erosion rate is 226 tons/mile/year. The TMDL prescribes a sediment-loading rate of 18 tons/mile/year.

Temperature exceedances were also documented on Corral Creek, with a current maximum daily temperature load of 22.39°C. The temperature TMDL prescribes a 42% reduction in the maximum daily average temperatures.

Crane Creek

Crane Creek is 303(d) listed for sediment from source to mouth. Grazing is the predominant source of sedimentation in the drainage, with limited riparian road impacts. Bank stabilities of 67% and 66% were documented on Crane Creek. The current estimated erosion rate is 172 tons/mile/year. The TMDL prescribes a sediment-loading rate of 25 tons/mile/year.

Grays Lake Outlet

Sediment, nutrients, and temperature are 303(d) listed pollutants above the falls on Grays Lake Outlet. The water from Grays Lake is allocated for irrigation, hence discharge to Grays Lake Outlet is limited above the falls. Temperature, nutrient and sediment TMDLs will not be developed for the upper section of Grays Lake Outlet because flow alteration is the overriding issue in this particular stream segment. Grays Lake Outlet, above the falls, should be delisted for sediment and nutrients and relisted as flow altered.

Channel recharge restores streamflow to Grays Lake Outlet below the falls, and Grays Lake Outlet is temperature listed from headwaters to mouth and temperature exceedances were documented in two locations. Current temperature loading is 28.34°C (maximum daily) and 21.58°C (maximum daily average). The TMDL prescribes a 54% and 58% reduction in maximum and average daily stream temperatures. Because Grays Lake Outlet is flow limited above the falls, the temperature TMDL applies to waters below the falls.

Hell Creek

Hell Creek is listed for sediment and nutrients. Land use is predominated by cattle grazing, and streambank stabilities less than the 80% stability target were observed. The current estimated sediment-loading rate on Hell Creek is 402 tons/mile/yr. The TMDL prescribes a sediment-loading rate of 39 tons/mile/year.

Hell Creek is not 303(d) listed for temperature, but stream temperature exceedances were documented. Current temperature loading is 19.51°C (maximum daily) and 17.41°C (maximum daily average). The TMDL prescribes 33% and 48% reductions in maximum and average daily temperatures.

Homer Creek

Homer Creek is 303(d) listed for sediment and Homer Creek's sediment sources are related to grazing. Streambank conditions that are below the DEQ 80% stability target were

observed. The current estimated erosion rate is 411 tons/mile/year, and the TMDL prescribes an erosion rate of 20 tons/mile/year.

Homer Creek is not 303(d) listed for temperature, but stream temperature exceedances were documented. Current temperature loading is 26.42°C (maximum daily) and 18.79°C (maximum daily average). The temperature TMDL prescribes 51% and 52% load reductions in the maximum and average daily temperatures.

Lava Creek

Lava Creek is 303(d) listed for sediment and temperature. Stream temperature data reveal current temperature loads of 22.80°C (maximum daily) and 18.44°C (maximum daily average). The TMDL prescribes a 43% and 51% reduction in maximum and average daily temperatures. It is expected that stream temperatures will improve with riparian zone enhancement.

A culvert on upper Lava Creek continuously exists in a state that inhibits downstream flow. It is speculated that beaver activity, combined with anthropogenic actions, continue to create this condition. It is likely that eliminating the anthropogenic cause of this condition and clearing the obstruction will assist in improving stream temperatures.

Streambank erosion inventories show bank stabilities of 26% at the upper inventory site and 55% at the lower inventory site. The current sediment-loading rate is 537 tons/mile/year. The TMDL prescribes a sediment-loading rate of 16 tons/mile/year.

Long Valley Creek

Listed for sediment and temperature, Long Valley Creek parallels the Long Valley Road. Land use on Long Valley Creek consists of grazing and hay production and bank stabilities were observed below the 80% stability target. An earthen dam retains water in the Robinson Reservoir to impound spring runoff waters for irrigation. Because flow alteration is the prevailing issue, TMDLs will not be developed for Long Valley Creek. Long Valley Creek should be delisted for sediment and temperature and relisted as flow altered.

Meadow Creek

Meadow Creek is listed for sediment, and the principal sources of sediment are streambank erosion in the upper reaches and road erosion in the lower sections. The sediment load allocations have been developed via erosion inventories and road erosion modeling. From headwaters to South Fork Meadow Creek, streambank stabilities of 80% have been achieved from cessation and/or rotation of grazing practices in the vicinity. The current estimated erosion rate from road and streambank erosion is 60 tons/mile/year. A sediment-loading rate of 34 tons/mi/year, from bank erosion, is anticipated if all streambanks are restored to 80% stability. A 50% reduction in road erosion should occur for beneficial use support, prescribing a road sediment-loading rate of 6 tons/mile/year.

Mill Creek

The land surrounding Mill Creek is private and state owned with grazing the principal land use. Monitoring and observations show the largest impacts on the creek are in the middle and lower reaches where land utilization is maximized. Riparian fencing below the headwaters has contributed to riparian improvement, thereby reducing streambank erosion. Substrate samples collected on Mill Creek, above the Willow Creek confluence, had 51% of the sediment fines less than 6.35 mm. Streambank erosion inventories showed the highest concentration of sedimentation occurring in the middle reaches of Mill Creek, above the Blackfoot Reservoir Road crossing. The current estimated erosion rate from streambank erosion is 26 tons/mile/year. The TMDL prescribes a loading rate of 8 tons/mile/year.

Stream temperature exceedances were documented with current temperature loading at 24°C (maximum daily) and 18.2°C (maximum daily average). The TMDL prescribes a 46% and 51% reduction in maximum and average daily temperatures.

Buck Creek is a tributary of Mill Creek and it is located in the Mill Creek assessment unit therefore, Mill Creek load allocations apply to Buck Creek.

Sawmill Creek

Sawmill Creek is 303(d) listed for temperature and sediment. Stream temperature data documented major exceedances in salmonid spawning criteria at 20.9°C (maximum daily) and 18.11°C (maximum daily average). The TMDL prescribes 38% and 50% reductions in maximum and average daily temperatures. The current estimated streambank erosion rate on Sawmill Creek is 340 tons/mile/year. It is expected that a rate of 19 tons/mile/year will occur if banks are restored to 80% stable.

Sellers Creek

Sellers Creek is 303(d) listed for sediment and temperature. Riparian road impacts, riparian grazing, and flow alteration are the three principal causes of perturbation on Sellers Creek. Subsurface fines are higher than the target level of 28% and bank erosivities are highest above the Long Valley Road crossing. Streambank erosion on lower Sellers Creek, below Long Valley Road crossing, is nominal due to limited grazing. The current estimated erosion rate is 304 tons/mile/year. The TMDL prescribes an erosion rate of 11 tons/mile/year.

Stream temperatures in Sellers Creek were above the spawning criteria 65% and 85% of the time. Temperature data show that current temperature loads are 26.7°C (maximum daily) and 18.51°C (maximum daily average). The TMDL prescribes a 51% reduction in both maximum and average daily temperatures.

Seventy Creek

Seventy Creek is 303(d) listed for temperature, sediment, and flow alteration. At this time, data is not available to verify that Seventy Creek is temperature impaired. It is inferred that

temperature impairment from sedimentation will improve, as much as possible in light of flow alterations, with reduced sedimentation and riparian zone improvement. Streambank erosion inventories show banks on Seventy Creek, above the Blackfoot Reservoir Road, to be relatively stable. In the lower reaches, bank stabilities are as low as 39%. Bank erosion on Seventy Creek should not exceed 11 tons/mile/year. The current estimated sediment-loading rate is 288 tons/mile/year.

Tex Creek

Tex Creek is not listed for temperature, but stream temperature data show that there were elevated spawning temperatures at 24.19°C (maximum daily) and 17.96°C (maximum daily average). The TMDL calls for a 46% and 50% reduction in maximum and average daily temperatures.

Sediment impacts on Tex Creek have not been quantified via subsurface sediment sampling because extremely dry conditions over recent years have prohibited the accurate identification of viable spawning habitat. However, it is well documented that the Tex Creek fishery is declining, most likely from stream sedimentation. Based on historic knowledge and fish data spanning several decades, a sediment TMDL is necessary for Tex Creek. Road impacts are the primary source of sedimentation in Tex Creek, so the TMDL is based on road erosion. The current estimated sediment-loading rate is 8 tons/mile/year. The TMDL prescribes a loading rate of 4 tons/mile/year hence, a 50% reduction in road erosion is recommended.

Willow Creek

The entire Willow Creek is 303(d) listed for temperature above and below the reservoir. Temperature logger data show that stream temperatures at Kepp's Crossing are above the salmonid spawning criteria. Documented maximum daily temperatures are 24.54°C during spring spawning and 18.72°C during fall spawning. The TMDL prescribes 47% and 60% reductions in maximum and average daily temperature loads.

Willow Creek, below the reservoir dam to Eagle Rock Canal, is listed for temperature and sediment. Flow from the Ririe Reservoir dam is reduced to no discharge for four to five months of the year. Flow is the limiting factor for beneficial use support below the Ririe Reservoir, so it should be delisted for sediment and temperature and relisted as flow altered.

Willow Creek, from headwaters to Sellars Creek and then from Grays Lake Outlet to the Reservoir, is listed for sediment and temperature. Streambed sampling shows that sediment impacts are evident in spawning gravels at Grays Lake Outlet and Kepp's Crossing. In both instances, subsurface fines were greater than 28%, at 31%. Streambank stabilities are less than 80% in most areas above the Grays Lake Outlet confluence. Bank stabilities meet the 80% target in the steep walled canyons below the confluence with Grays Lake Outlet. The current sediment-loading rate on Willow Creek is 213 tons/mile/year. The TMDL prescribes a sediment-loading rate of 14 tons/mile/year.

High nutrient concentrations in the water column along with nuisance levels of aquatic plant growth were detected in Willow Creek. To address the excess nutrients in Willow Creek, phosphorus and nitrogen load allocations were developed. The load allocations prescribe a 23% reduction in total phosphorus loading and a 73% reduction in nitrogen loading to Willow Creek.

The Ririe Reservoir is 303(d) listed for sediment. Aquatic conditions in the reservoir environment differ from that of streams. Current biological indices for cold water aquatic life apply to streams, not reservoirs. Given this, the Ririe Reservoir listing for sediment should be delisted, because there is insufficient data to compile an accurate assessment. Even though a TMDL will not be developed for the Reservoir, it should be noted that load reductions for upstream Willow Creek and its tributaries should result in an overall net reduction of sediment loading to the Reservoir.

Rock Creek, a tributary of Willow Creek, is 303(d) listed for temperature. Temperature data for Rock Creek itself does not exist however, temperature data is available just downstream of Rock Creek, on Willow Creek (Kepp's Crossing). For the purpose of this TMDL, and the assessment unit reporting system, Rock Creek will receive the same load allocation as Willow Creek proper.

The sediment load that can be assimilated by the streams in the Willow Creek Subbasin, and still meet Idaho's water quality narrative standard for sediment, is unknown. The loading capacity lies somewhere between the current loading level and sediment loads from natural streambank erosion. It is assumed that cold water aquatic life and salmonid spawning would be fully supported at natural background sediment loading rates.

Table B. Summary of assessment outcomes.

Waterbody Segment	Assessment Unit(s) of ID17040205	Pollutant	TMDL(s) Completed	Recommended Changes to §303(d) List	Justification
Birch Creek (WQLS 2042) Headwaters to Willow Creek	SK006_02 SK006_03	Sediment	No	Delist for sediment and relist as flow altered	Flow Altered (Anthropogenic)
Brockman Creek (WQLS 2047) Headwaters to Grays Lake Outlet	SK024_02 SK024_03 SK025_02 SK025_03	Nutrient	No	Delist	No Exceedances Documented
		Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented TMDL Completed
Buck Creek (WQLS 5232) Headwaters to Mill Creek	SK012_02	Sediment	Yes	None	TMDL completed
Corral Creek (WQLS 2048) Headwaters to Brockman Creek	SK026_02	Sediment	Yes	None	TMDL completed

Waterbody Segment	Assessment Unit(s) of ID17040205	Pollutant	TMDL(s) Completed	Recommended Changes to §303(d) List	Justification
		Temperature	Yes	None	Exceedances Documented TMDL completed
Crane Creek (WQLS 2056) Headwaters to Willow Creek	SK014_02	Sediment	Yes	None	TMDL completed
Grays Lake Outlet (WQLS 2044) Grays Lake to Above Falls	SK020_02	Nutrient	No	Delist for nutrient and relist as flow altered	Flow Altered (Anthropogenic)
		Sediment	No	Delist for sediment and relist as flow altered	Flow Altered (Anthropogenic)
Grays Lake Outlet (WQLS 2044) Grays Lake to Willow Creek	SK016_04 SK017_04 Sk019_04	Temperature	Yes	None	Exceedances Documented TMDL completed
Hell Creek (WQLS 2045) Headwaters to Grays Lake Outlet	SK029_02 SK029_03	Nutrient	No	Delist	No Exceedances Documented
		Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented TMDL completed
Homer Creek (WQLS 2050) Headwaters to Grays Lake Outlet	SK018_02 SK018_03	Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented TMDL completed
Lava Creek (WQLS 2046) Headwaters to Grays Lake Outlet	SK028_02 SK028_03	Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented TMDL completed
Long Valley Creek (WQLS 2053) Headwaters to Willow Creek	SK015_02	Sediment	No	Delist for sediment and relist as flow altered	Flow Altered (Natural and Anthropogenic)
		Temperature	No	Delist for temperature and relist as flow altered	Flow Altered (Natural and Anthropogenic)
Meadow Creek (WQLS 2040) Headwaters to Ririe Reservoir	SK032_02 SK032_03	Sediment	Yes	None	TMDL Completed
		Temperature	Yes	None	Exceedances Documented TMDL completed

Waterbody Segment	Assessment Unit(s) of ID17040205	Pollutant	TMDL(s) Completed	Recommended Changes to §303(d) List	Justification
Mill Creek (WQLS 2054) Headwaters to Willow Creek	SK012_02 SK012_03	Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented TMDL completed
Ririe Lake (WQLS 2036)	SK002_05	Sediment	No	Delist	Not assessed
Rock Creek (WQLS 2028) Headwaters to Willow Creek	SK005_02	Temperature	Yes	None	Exceedances Documented TMDL completed
Sawmill Creek (WQLS 2049) Headwaters to Brockman Creek	SK027_02	Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented TMDL completed
Sellars Creek (WQLS 2051) S FK Sellars to Willow Creek	SK010_02 SK010_03	Flow Alteration	No	None	EPA Policy
		Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented TMDL completed
Seventy Creek (WQLS 2057) Headwaters to Willow Creek	SK011_02	Flow Alteration	No	None	EPA Policy
		Sediment	Yes	None	TMDL completed
		Temperature	No		Insufficient Data
Tex Creek (WQLS 2041) Headwaters to Indian Fork	SK031_02 SK031_03	Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented TMDL completed
Willow Creek (WQLS 2035) Ririe Dam to HUC boundary	SK001_05	Sediment	No	Delist for sediment and relist as flow altered	Flow Altered (Anthropogenic)
		Temperature	No	Delist for temperature and relist as flow altered	Flow Altered (Anthropogenic)
Willow Creek (WQLS 2037) Grays Lake Outlet to Ririe Reservoir	SK004_05 SK005_05	Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented
		Nutrients	Yes	None	Exceedances Documented

Waterbody Segment	Assessment Unit(s) of ID17040205	Pollutant	TMDL(s) Completed	Recommended Changes to §303(d) List	Justification
Willow Creek (WQLS 2038) Sellars Creek to Grays Lake Outlet	SK008_04 SK005_04	Nutrients	Yes	None	Exceedances Documented
Willow Creek (WQLS 2039) Headwaters to Sellars Creek	SK011_04 SK013_03	Sediment	Yes	None	TMDL completed
		Temperature	Yes	None	Exceedances Documented
		Nutrients	Yes	None	Exceedances Documented